WHAT IS CLAIMED IS:

1. A method for communicating, comprising:

transmitting a set of first training symbols using a first communication channel; and

transmitting one or more sets of second training symbols using one or more second communication channels;

wherein the one or more second sets of training symbols are based on the set of first training symbols and a cross-correlation estimate between the first set of training symbols and at least one of the sets of second training symbols is essentially zero.

2. The method of claim 1, wherein at least the first set of training symbols is transmitted using an orthogonal frequency division multiplexing technique.

3. The method of claim 1, wherein each cross-correlation estimate between the first set of training symbols and every set of the one or more sets of second training symbols is essentially zero.

4. The method of claim 3, wherein each cross-correlation estimate between every two sets of training symbols of the one or more sets of second training symbols is essentially zero.

5. The method of claim 1, wherein at least one set of the one or more sets of second training symbols is substantially identical to the set of first training symbols with a phase shift.

6. The method of claim 5, wherein every set of the one or more sets of second training symbols is substantially identical to the set of first training symbols with a respective phase shift.

7. The method of claim 1, wherein the first set of training signals is transmitted using a first transmit device and at least one of the one or more sets of second training signals is transmitted using a second transmitting device.

8. The method of claim 7, further comprising:

receiving the set of first training symbols;

receiving at least one of the one or more sets of second training symbols; and

characterizing two or more communication channels based on the set of first training symbols and the one or more second sets of training symbols.

9. The method of claim 8, wherein characterizing the two or more communication channels does not use a matrix inversion.

10. A method of communicating, comprising:

receiving a set of first training symbols;

receiving one or more sets of second training symbols; and

characterizing two or more communication channels based on the set of first training symbols and the one or more second sets of training symbols;

wherein a cross-correlation estimate between the set of first training symbols and at least one of the sets of second training symbols is essentially zero.

11. The method of claim 10, wherein at least the set of first training symbols transmitted using an orthogonal frequency division multiplexing technique.

12. The method of claim 11, wherein each cross-correlation estimate between the set of first training symbols and every set of the one or more sets of second training symbols is essentially zero.

13. The method of claim 12, wherein each cross-correlation estimate between every two sets of training symbols of the one or more sets of second training symbols is essentially zero.

14. The method of claim 13, wherein at least one set of the one or more sets of second training symbols is substantially identical to the set of first training symbols with a phase shift.

15. The method of claim 14, wherein every set of the one or more sets of second training symbols is substantially identical to the set of first training symbols with a respective phase shift.

16. The method of claim 10, wherein characterizing two or more communication channels does not use a matrix inversion.

17. The method of claim 10, wherein the set of first training signals is transmitted using a first transmit device and the one of the one or more sets of second training signals is transmitted using a second transmitting device.

18. A set of communication signals, comprising:

a first electromagnetic signal that contains a set of first training symbols;

a second electromagnetic signal that contains a set of second training symbols;

wherein a cross-correlation estimate between the set of first training symbols and the set of second training symbols is essentially zero.

19. The set of communication signals of claim 18, wherein the set of second training symbols is substantially identical to the set of first training symbols with a phase shift.

20. The set of communication signals of claim 19, wherein the set of first training signals is transmitted using a first transmit device and the set of second training signals is transmitted using a second transmitting device.

21. An apparatus for communicating, comprising:

a first transmit device that transmits a set of first training symbols; and

a second transmit device that transmits a set of second training symbols;

wherein a cross-correlation estimate between the set of first training symbols and the set of second training symbols is essentially zero.

22. The apparatus of claim 21, wherein the set of second training symbols is substantially identical to the set of first training symbols with a phase shift.

23. The apparatus of claim 22, wherein the set of second training symbols is related to the set of first training symbols according to:

$$t_2[n,k] = t_1[n,k]W_K^{-kl_o},$$

where $t_1[n, k]$ is the set of first training symbols, $t_2[n, k]$ is the set of second training symbols and

$$W_K^{-kl_o} = \exp(-j\frac{2\pi kl_0}{K}),$$

where n is an ODFM block, k is an OFDM sub-band, K is a total number of OFDM sub-bands and l_0 is a reference frequency.

24. An apparatus for communicating, comprising:

a receive device that receives at least a set of first training symbols transmitted by a first transmit device and a set of second training symbols transmitted by a second transmit device; and

an estimator that estimates at least a first channel related to the first transmit device based on at least the set of first training symbols;

wherein a cross-correlation estimate between the set of first training symbols and the set of second training symbols is essentially zero.

25. The apparatus of claim 24, wherein the estimator further estimates the first channel based on at least the set of second training symbols.

26. The apparatus of claim 25, wherein the estimator estimates the first channel without using a matrix inversion.

27. The apparatus of claim 26, wherein the set of second training symbols is substantially identical to the set of first training symbols with a phase shift.

28. The apparatus of claim 27, wherein the set of second training symbols is related to the set of first training symbols according to:

$$t_2[n,k] = t_1[n,k]W_K^{-kl_o},$$

where $t_1[n, k]$ is the set of first training symbols, $t_2[n, k]$ is the set of second training symbols and

$$W_K^{-kl_o} = \exp(-j\frac{2\pi kl_0}{K}),$$

where n is an ODFM block, k is an OFDM sub-band, K is a total number of OFDM sub-bands and l_0 is a reference frequency.